REMARKS

Claims 1-12 are in the case and presented for consideration.

Rejection Under 35 U.S.C. § 103

Claims 1-12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,197,850 to Fernandez, et al. ("U.S. '850") or U.S. Patent 6,360,808 to Twardowska, et al. ("U.S. '808") in view of WO 00/73236 (or the corresponding U.S. Patent 6,972,059) to Skerdi ("WO '236") and U.S. Patent 3,815,665 ("U.S. '665") or DE 3113229 ("DE '229"), both to Baur. The reasons for the rejection are stated on pages 2-4 of the Office Action. The rejection is respectfully traversed.

Before discussing the distinctions between the claims and the cited references alleged by the Office to render the claims patentable under 35 U.S.C. 103, the Supreme Court case of *KSR International Co. v. Teleflex Inc. et al.* which was decided on April 30, 2007, should be considered. The Supreme Court in this case reversed the Court of Appeal for the Federal Circuit's application of the so called "teaching, suggestion, or motivation" (TSM) test, in favor of a broad inquiry based on the *Graham* v. *John Deere Co. of Kansas City*, 383 U.S. 1, and, in the words of the Court, on common sense.

The prohibition against using hindsight, however was maintained. The opinion stated, for example:

> "A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning. See *Graham*, 383 U.S., at 36 (warning against a "temptation to read into the prior art the teachings of the invention in issue" and instructing courts to " 'guard against slipping into the use of hindsight' " (quoting *Monroe Auto Equipment Co.* v. *Heckethorn Mfg. & Supply Co.*, 332 F. 2d 406, 412 (CA6 1964))). Rigid preventative rules that deny factfinders recourse to common sense, however, are neither necessary

under our case law nor consistent with it."

Considering now the rejected claims, and what is fairly taught by U.S. '850, U.S. '808, WO '236, U.S. '665 and DE '229, and using a common sense approach (but not hindsight) as called for by the Supreme Court in *KSR International Co. v. Teleflex Inc. et al.,* Applicant respectfully submits that none of the cited references, alone or in combination, teach or fairly suggest the invention recited in independent claim 1 and its dependent claims 2-12.

The claimed invention is directed in a broad aspect to a method for producing exothermic sleeves having the novel and nonobvious features of:

(1) introducing a fluoride-free composition in a mould, in the space defined by the mould and two cores;

(2) thereby obtaining a sleeve which has openings at both ends;

(3) one of such openings being provided – as a result of the manufacturing process with the mould and the two cores – with an inner double chamfer; and

(4) the opening at the other end being closed by means of a plug, which can be made of any suitable material.

These features of the claimed invention constitute the improvements over the prior-art sleeves, since:

(1) an intermediate biscuit is no longer necessary, which simplifies the manufacturing process (no additional assembling step);

(2) the corresponding sleeve is produced in an easier way, with less material, with the corresponding saving cost;

(3) a notch is provided in the casting deadhead in order to simplify separation

thereof from the casting piece; and

(4) the closing plug can be made of any material (plastic, wood, sawdust, etc.), suitable for closing purposes, such as to prevent dust or sand or any other undesirable material from entering the sleeve, which also leads to a corresponding reduction in the sleeve cost.

In attempting to overcome the Office's obviousness rejection, Applicant will explain in greater detail below, why a person of ordinary skill in the art, after making the factual determinations enunciated in *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 U.S.P.Q. 459, 467 (1966), including weighing the differences between the claimed invention and the prior art, would not have been led to modify the prior art or to combine prior art references to arrive at the claimed invention.

First, consider the primary reference, U.S. '850 to Fernandez. U.S. '850 does not disclose a **fluoride-free exothermic** composition, and thus, requires a specific insert (since it is not formed as a single piece) to act as an initiator for the exothermic reaction. Unlike the claimed invention, the **double chamfer** in the inner wall of the sleeve is not disclosed in U.S. '850, nor is there any suggestion to make such a chamfered structure from a mould and **two cores**. The closing plug, adapted to close one end of the exothermic sleeve and made of a suitable material, is also not disclosed in the U.S. '850 reference.

Therefore, there exist a number of important differences between the claimed invention and U.S. '850. It is important to point out that these differences mutually affect each other to achieve a technical effect over and above the sum of their respective effects; that is, they are not to be considered as separate or independent features which

represent a mere aggregation of features. In effect, they could be grouped as follows:

(A) The claimed exothermic sleeve is made of a fluoride-free composition. ↔ The need for the breaker core is eliminated. ↔ The sleeve becomes or is made as a single piece. These features are clearly linked by the common technical concept of starting the production of the sleeve from a fluoride-free composition.

(B) The claimed exothermic sleeve is obtained according to a process which includes using a mould and two cores. ↔ This provides one of the inner ends of the resulting sleeve with a double chamfer, and the other end of the sleeve with a flat inner wall closable with a plug made of a suitable (e.g., cheap) material. These features are also clearly linked by the common technical concept of producing a sleeve with a reduced manufacturing cost, which represents a significant departure from the conventional approach of making exothermic sleeves.

The claimed invention solves the problem of the prior art sleeves with a method of producing an exothermic sleeve that is not a mere juxtaposition of known steps or principles, but rather, utilizes a chain of steps linked together (e.g., starting point composition, structural geometry of the mould and curing process, etc.) for the purpose of obtaining an exothermic sleeve with the novel characteristics/features, as recited in independent claim 1.

The fact that these differentiating features are linked together is an important issue to take into account when determining the obviousness or appropriateness of combining separate documents to arrive at the features which are not separate or independent, but are linked by a common inventive concept.

The Office Action seeks to modify the sleeve of U.S. '850 or U.S. '808 by relying

on:

- WO '236 to teach the use of a "fluoride-free composition";
- US '665 or DE '229 to teach forming the sleeve as a "single piece", or that there is no need for a separate breaker core;
- US '665 to teach the double chamfer opening and the closing plug;

Before analyzing whether the above combination of features would have been obvious to a person ordinary skill in the art, it is important to bear in mind that US '665 discloses a refractory sleeve, not an exothermic sleeve, and the corresponding technologies and problems involved with fabricating refractory sleeves are substantially different. Thus, it is difficult to appreciate how an ordinarily skilled technician would apply the teachings of the US '665 reference to make the claimed invention. The fact that the claimed invention relates to an exothermic feeder should effectively remove the US '665 reference as relevant prior art.

Regarding DE '229, this document merely discloses an exothermic sleeve produced according to conventional methods, such as the one shown in Figs. 1A-1B of the present application. That is, the problems related to using a fluoride composition also apply in this case. While it may not be explicitly indicated in DE '229 (as it is not the aim or purpose of the invention disclosed therein), in order to use the feeder shown in DE '229, a fluoride-free biscuit (breaker core) has to be used; otherwise, the fluoride-related problems (degradation of the nodules in the contact area of the sleeve with the piece) will arise.

With the above considerations of US '665 and DE '229 in mind:

- It is respectfully submitted that there is no reason why a person trying to

solve the problems (see item (A) above) posed by the exothermic feeder shown in US '850 would look to US '665, which does not relate to an exothermic feeder, to solve such "exothermic feeder related" problem.

- It is also submitted that there is no reason why a person trying to solve the problems posed (see item (A) above) by the exothermic feeder shown in US '850 would look to DE '229, which suffers from the same problems as US '850.

WO '236 may be considered to teach a fluoride-free exothermic composition for forming a feeder due to environmental reasons. But in the present application, the use of a fluoride-free exothermic composition has a specific technical reason associated to the use of the resulting fluoride-free exothermic sleeve – to overcome the problems associated with the "fish-eye" defect in the cast piece, and to avoid the need of a fluoride-free biscuit.

But again, how can features from separate different documents be combined when the different features not shown by the closest prior art document, i.e., U.S. '850 or U.S. '808, have an effect on each other? In the claimed invention, the breaker core is not needed, and then the sleeve is formed as a single-piece, precisely because the sleeve is made from a fluoride free exothermic composition.

Then, regarding the features discussed in item (B) above, while the provision of a double-chamber may be known in the foundry art, the closing plug (last step of the method defined in claim 1) is a missing feature that is not derivable from the cited documents, especially since the cited documents follow a different method or process to obtain the exothermic sleeve.

Moreover, if US '808 is considered as the primary reference, there are even more differentiating features. For instance, US '808 discloses a composition for an exothermic sleeve. The process for making an exothermic sleeve disclosed in US '808 merely defines the conventional process of producing an exothermic sleeve, such as the one shown in Figs. 1A-1B of the present application. It does not disclose in any way the use of a **fluoride-free** composition, nor that the sleeve obtained with such a composition has **two open ends**, with one of the openings having an internal **double chamfer** and the other opening being closed by a **plug**, which can be made of any suitable material – be it cheap or expensive.

In addition to the differentiating features already mentioned with respect to US '850, US '808 also lacks another important feature – the two open ends in the already formed exothermic sleeve.

The reasoning followed for US '850 may be applied *mutatis mutandis* to the US '808 reference, with the additional differences mentioned previously regarding the fact that the starting point of US '808 is not even a sleeve that is open at its two ends.

Based on the foregoing reasons, Applicant respectfully maintains that the teachings of the cited references are not sufficient to render the claimed invention obvious. Accordingly, it is believed that claims 1-12 recite patentable subject matter, and withdrawal of the rejection of claims 1-12 is respectfully requested.

Applicant has endeavored to make the foregoing response sufficiently complete to permit prompt, favorable action on the subject patent application. In the event that the Examiner believes, after consideration of this response, that the prosecution of the subject patent application would be expedited by an interview with an authorized

representative of the Applicant; the Examiner is invited to contact the undersigned at (845) 359-7700.

Applicant respectfully submits that by this Amendment, the application is believed to have been placed in condition for allowance and such action is respectfully requested.

Respectfully submitted,

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